MiTAC

Service Manual

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SERVICEMAN WARNING X-RAY PRECAUTION

This product includes critical mechanical and electrical parts which are essential for X-radiation safety. For continued safety replace critical components indicated in the service manual only with the exact replacement parts given in the parts list. High operating voltage for this product is 24KV at minimum brightness. Refer to the service manual for measurement procedures and proper service adjustments.

Use high impedance meter to measure 2ND anode voltage. Connect HV probe (lead) to 2ND anode: connect (-) to picture tube dag grounding device. Arcing 2ND lead anode to chassis or tuner may damage transistors. When discharging picture tube or 2ND lead anode, arc to picture tube mounting wire or picture tube dag only. HV supply failures can increase X-radiation. Service HV supply with set inoperative or limit operating time to minimum.

WARNING

Picture tube in this receiver employs integral implosion protection. Replace with tube of the same type number for continued safety. High-vacuum picture tube is dangerous to handle. Only qualified personnel should service.

1. INTRODUCTION

This monitor has been manufactured only with the highest quality components and under the highest standards of quality control.

2. FEATURES

This monitor specifically provides the following features:

- Microprocessor-based design with digital control
- Non-volatile memory for 8 standard timing modes and 10 user-defined timing modes
- Built-in switching regulator power circuit, can be used with 100-240V AC, 50/60Hz universal power supply
- Low electro-magnetic radiation emission (for L/AL model)
- OSD (on-screen display) control function
- Green machine (power saving)

3. SPECIFICATIONS

PICTURE TUBE	Non-glare, anti-static (for L/AL model) Phosphor P22, 0.28mm dot pitch	
DISPLAY AREA	250mm (H) x 185mm (V) recommended	
COMPATIBILITY	VGA, SVGA, 8514/A, VESA	
RESOLUTION	VGA:	640 x 480 / 640 x 400 / 640 x 350
	SVGA:	800 x 600
	8514/A:	1024 x 768 (interlaced)
	VESA:	800 x 600 / 1024 x 768 (non-interlaced, 48KHz)
POWER MANAGEMENT	ON mode:	85W
	Standby mode:	<30W
	Suspend mode:	<5W
SYNCHRONIZATION (SCAN FREQUENCY)	Horizontal: 30KHz~50KHz Vertical: 50~90Hz	
VIDEO-BANDWIDTH	65MHz	
INPUT SIGNAL	Video: RGB analog, 0.7Vp-p/75Ω Sync: TTL separate, positive/negative	
INPUT CONNECTOR	15-pin D-type connector	
POWER REQUIREMENTS	Universal power supply: 100~240V AC, 50/60Hz, 85 Watts maximum consumption	
GROSS WEIGHT	14kg	

4. ENVIRONMENTAL REQUIREMENTS

Temperature

- **ENCLOSED CABINET:** $0^{o}C \sim 40^{o}C$ (operating)
  $-20^{o}C \sim 60^{o}C$ (storage)

Humidity

- **OPERATING:** 10 ~ 80%, non-condensing
- **STORAGE:** 10 ~ 90%, non-condensing

Altitude

- **OPERATING:** up to 10,000 ft.
- **STORAGE:** up to 30,000 ft.

5. SAFETY PRECAUTIONS

- **Power**
  - Use the type of power indicated on the marking label.

- **Plugs**
  - Do not remove any of the prongs of the monitor's three-pronged power plug.
  - Disconnect the power plug from the AC outlet if you will not use it for an indefinite period of time.

- **Power and extension cords**
  - Use the proper power cord with correct attachment plug type. If the power source is 120 V AC, use a power cord that has UL and CSA approvals. If the power source is a 240 V AC supply, use the tandem (T blade) type attachment plug with ground conductor power cord that meets the respective European country's safety regulations, such as VDE for Germany.
  - Do not overload wall outlets or power cords. Ensure that the total of all units plugged into the wall outlet does not exceed 15 amperes.
  - Ensure that the total ampere ratings on all units plugged into the extension cord is not above the cord's rating.
  - If the power supply cord, which came with your monitor, is to be connected to the PC instead of the wall outlet, this equipment is to be used with UL Listed Computers with receptacle rated 100~240VAC, 50/60Hz, 1.2A.

- **Environment**
  - Place the monitor on a flat and leveled surface.
  - Place the monitor in a well-ventilated place.
  - Keep the monitor away from:
    overly hot, cold or humid places
    places directly under sunlight
    dusty surroundings
    equipments that generate strong magnetic fields

6. INPUT SIGNAL TIMING

This monitor has been manufactured with 8 standard timing modes for different video resolutions. You can hold down STATUS and press SELECT to use the preset mode.

	mode 1	mode 2	mode 3	mode 4
H FREQUENCY (KHz)	31.47	31.47	35.52	48.0
V FREQUENCY (Hz)	60	70	86.962	72
H FRAME BORDER (μs)	0	0	0	0
H TOTAL SIZE (μs)	31.778	31.778	28.15	20.8
H DISPLAY SIZE (μs)	26.058	26.058	22.8045	16
H REAR PORCH (μs)	1.907	1.907	1.2471	1.28
H SYNC WIDTH (μs)	3.83	3.83	3.9195	2.4
H SYNC POLARITY	-	-	+	+
V FRAME BORDER (ms)	0	0	0	0
V TOTAL SIZE (ms)	16.65	14.268	11.499	13.853
V DISPLAY SIZE (ms)	15.253	12.711	10.8096	12.48
V REAR PORCH (ms)	1.048	1.111	0.577	0.478
V SYNC WIDTH (ms)	0.064	0.064	0.113	0.125
V SYNC POLARITY	-	+	+	+
VIDEO DOT CLOCK (MHz)	25.17	28.32	44.9	50.0
RESOLUTION	640x480	720x400	1024x768	800x600

(to be continued)

H: horizontal

V: vertical

	mode 5	mode 6	mode 7	mode 8
H FREQUENCY (KHz)	31.47	31.5	35.2	48.363
V FREQUENCY (Hz)	70	70	56	60
H FRAME BORDER (μs)	0	0	0	0
H TOTAL SIZE (μs)	31.778	31.776	28.4	20.677
H DISPLAY SIZE (μs)	26.058	25.42	22.7	15.754
H REAR PORCH (μs)	1.907	1.59	2.27	2.462
H SYNC WIDTH (μs)	3.83	3.81	2.84	2.092
H SYNC POLARITY	+	–	–	–
V FRAME BORDER (ms)	0	0	0	0
V TOTAL SIZE (ms)	14.268	14.269	17.84	16.667
V DISPLAY SIZE (ms)	11.122	12.716	17.0	15.880
V REAR PORCH (ms)	1.906	0.89	0.74	0.6
V SYNC WIDTH (ms)	0.064	0.064	0.057	0.124
V SYNC POLARITY	–	+	–	–
VIDEO DOT CLOCK (MHz)	25.17	25.172	35.2	65.0
RESOLUTION	640x350	640x400	800x600	1024x768

(continued)

*H: horizontal V: vertical

**Model 5~8: for reference only

This monitor is also provided with 10 blank storage areas for saving timings. If you are not satisfied with the standard mode, you can define your own timings following this procedure:

1. Use SELECT ►/◄ on the control panel to select the option you want to adjust.

2. Use ADJUST +/– on the control panel to adjust the value of that option.

3. Press STATUS or SELECT ►/◄ to save this mode.

7. THEORY OF OPERATION

Switch Mode Power Supply

The current mode control IC is U901. To avoid the screen being interfered, its circuit applies SYNC trigger.

- Pin 6 of U901 directly drives MOSFET Q901 and oscillates T902 transformer, so that energy will be transferred from the primary voltage to the secondary voltage . The secondary voltage is rectified by D906, D915, D918, D919 and D920, to obtain output voltage by way of the π filter circuit.
- Pin 3 of U901 offers over current protection, which detects the source current of Q901 via R908. When the output is over the limit, the voltage will be cut to zero volts. The 22V input will be regulated to 12V output via regulator U702.
- TH901 is a positive temperature coefficient resistance. It performs degaussing function when the power is on.
- The power saving circuit consists of C912, C913, Q911, Q912, R914, R950, T903, and ZD903. If the vertical SYNC signal doesn't appear, the voltage on pin 1 of U901 will shut down, and the SMPS (Switch Mode Power Supply) will be OFF.

See figure SD640012100102 (page 37).

Input Circuit

From the SYNC signal of U103, we know the shaping and polarity status. We also get positive horizontal SYNC output from pin 11, and positive vertical SYNC output from pin 8.

In order to make sure that the horizontal SYNC output has the same pulse width, we use U101.

See figure SD640012100102 (page 37).

Horizontal Process Circuit

The horizontal process IC is U501.

- Pin 3 of U501 is the horizontal SYNC input point.
- AFC pulse comes from FBT pin 6, which goes through pin 4 of U501.
- Pin 8 controls the duty cycle of pin 8.
- C533, Q321, R553, R557 and U101 apply the F-V voltage.

See figure SD640012100102 (page 37).

Vertical Process Circuit

The vertical process IC is U201.

- Pin 5 is the input point of the vertical SYNC.
- Pin 13 is the output point of the blanking pulse .
- The virtical size is controlled by the current which passes through pin 7, the vertical free running is controlled by C209, C210, D202, R219, R220, ZD201, and the vertical linearity is controlled by C206, C207, R210.
- The output point of vertical pulse is U201 pin 1.

See figure SD640012100102 (page 37).

Horizontal Driver Circuit

- The output point of the horizontal driver pulse is pin 1 of U501.
- T502 increases the horizontal driver pulse current to drive Q501.
- T502 is an FBT. B+ parabolic wave flows into L502, Q504 and Q505 to modify a pinchushion.
- C506 is controlled by Q502, Q519 and Q522 to get the horizontal linearity.

See figure SD640012100102 (page 37).

Step-down B+ Circuit

- U601 is adopted to be a monostable circuit, triggered by pin 6 of T501. The spuare wave comes out from pin 3.
- Q612, D609, L601 and C510 generate the step-down B+.

See figure SD640012100102 (page 37).

Video Amplifier Circuit

U701 is a pre-amplifier IC.

- R-gain and B-gain are separately sent into pin 8 and pin 27.
- The video amplifier circuit uses the traditional cascade circuit.
- RGB BIOS is controlled by pin 15, pin 19, and pin 24.

See figure SD640012100102 (page 37).

Microprocessor Circuit

U4 is a 8-bit microprossor.

- U1 is the EPROM which can hold 10 preset modes and 10 user-defined modes.
- U4 is a PWM converter with 6 pins to provide HORIZONTAL PHASE, HORIZONTAL WIDTH, VERTICAL CENTERING, VERTICAL SIZE, PINCUSHION, and TRAPEZOID function.

See figure SD640012100102 (page 37).

Power Management

- Standby mode: cut off the 22V DC via C918, Q905, Q907, R942, R943
- Suspend mode: cut off the main power by coupling T903 and the vertical pulse

8. CONTROLS AND ADJUSTMENTS

Turn all of the variable resistors to the mid-position. Warm up for at least twenty minutes.

1. B^+ ADJUSTMENT

<a>145V DC ADJUSTMENT

input timing:	31KHz 480L
input pattern:	crosshatch
test point:	R924
test value:	145±0.5V DC
ADJ VR:	VR902

<b>86V DC ADJUSTMENT (for M/AM model)
90V DC ADJUSTMENT (for L/AL model)

input timing:	31KHz 480L
input pattern:	crosshatch
test point:	TP5 (to get a maximum horizontal width)
test value:	86±1V DC (for M/AM model)
	90±1V DC (for L/AL model)
ADJ VR:	VR601 (to get a full-scan screen)

2. HORIZONTAL FREE-RUNNING ADJUSTMENT

input timing:	48KHz
input pattern:	full white
test point:	TP1 (GND)
test result:	the image is stable
ADJ VR:	VR501

3. CUT-OFF VLOTAGE ADJUSTMENT

input timing:	31KHz 480L
input pattern:	raster only
test point:	brightness=max. (external control panel) contrast=min. (external control panel)
test value:	Y=0.8~1F.L VR706 - x=281±10% VR705 - y=311±10%
ADJ VR:	G2, VR702, VR705, VR706

4. WHITE BALANCE ADJUSTMENT

input timing:	31KHz 480L
input pattern:	circle
test point:	brightness=medium (external control panel) contrast=maximum (external control panel)
test value:	1. VR703 - x=281±10% VR704 - y=311±10% (if you cannot get the precise value, repeat the process from step 1.) 2. VR701- Y=45F.L.
ADJ VR:	VR701, VR703, VR704

5. FOCUS ADJUSTMENT

input timing:	48KHz
input pattern:	text mode
test value:	the image is sharp
ADJ VR:	G4

6. MICROPROCESSOR SETTING

You can define your own timings: (refer to page 12)

<a>HORIZONTAL WIDTH ADJUSTMENT

test point: 250±4mm
ADJ SW: **horizontal width** and **+/-** buttons

<b>HORIZONTAL PHASE ADJUSTMENT

test point: the image is on the center of the raster (±3mm)
ADJ SW: **horizontal phase** and **+/-**buttons

<c>VERTICAL SIZE ADJUSTMENT

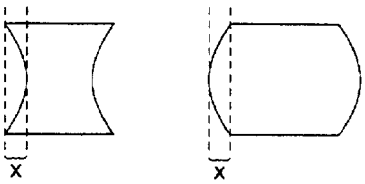
test point: 185±4mm
ADJ SW: **vertical size** and **+/-** buttons

<d>VERTICAL CENTERING ADJUSTMENT

test point: the image is on the center of the raster (±3mm)
ADJ SW: **vertical centering** and **+/-** buttons

<e>PINCUSHION ADJUSTMENT

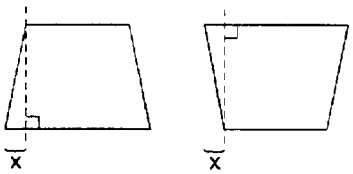
test point: x≤1.5mm



ADJ SW: **pincushion** and **+/-** buttons

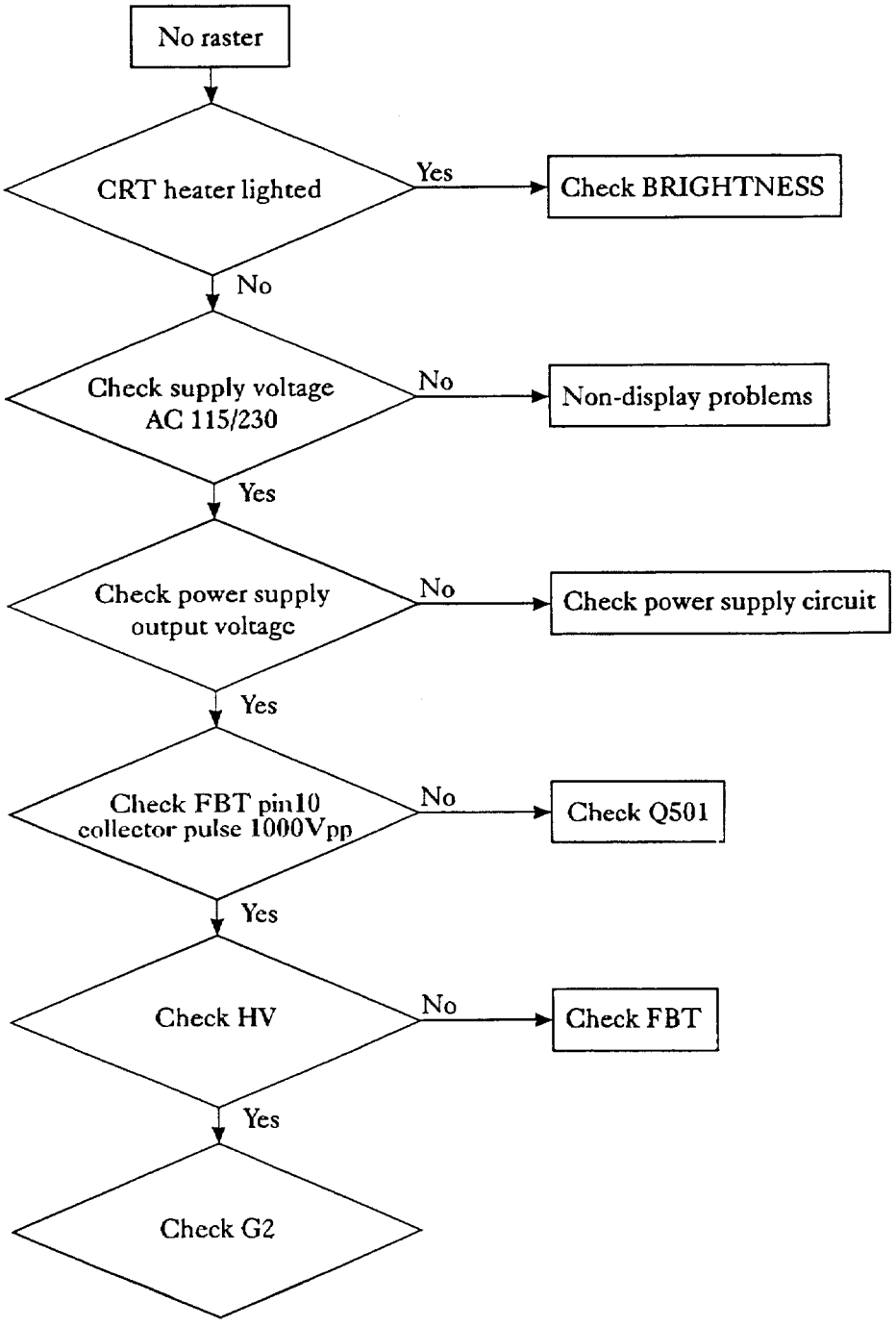
<f>TRAPEZOID ADJUSTMENT

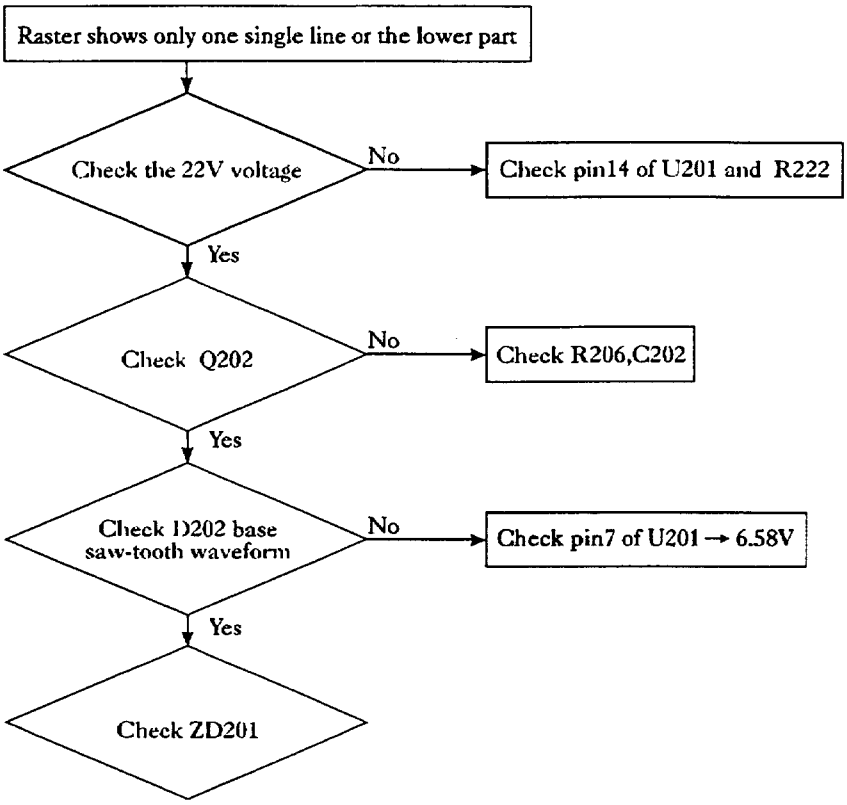
test point: x≤3mm

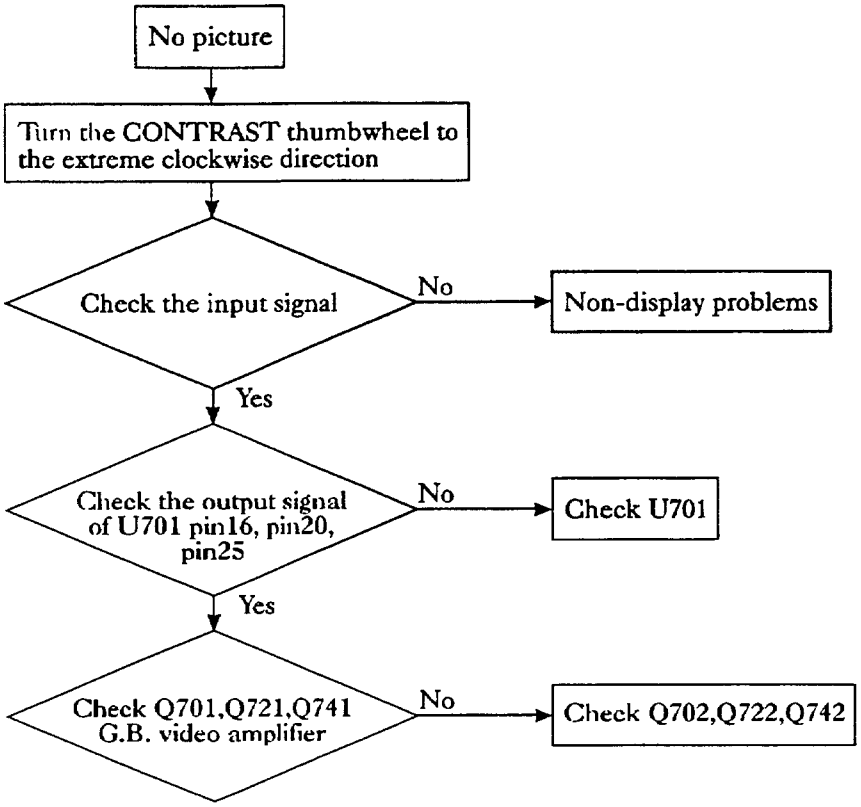


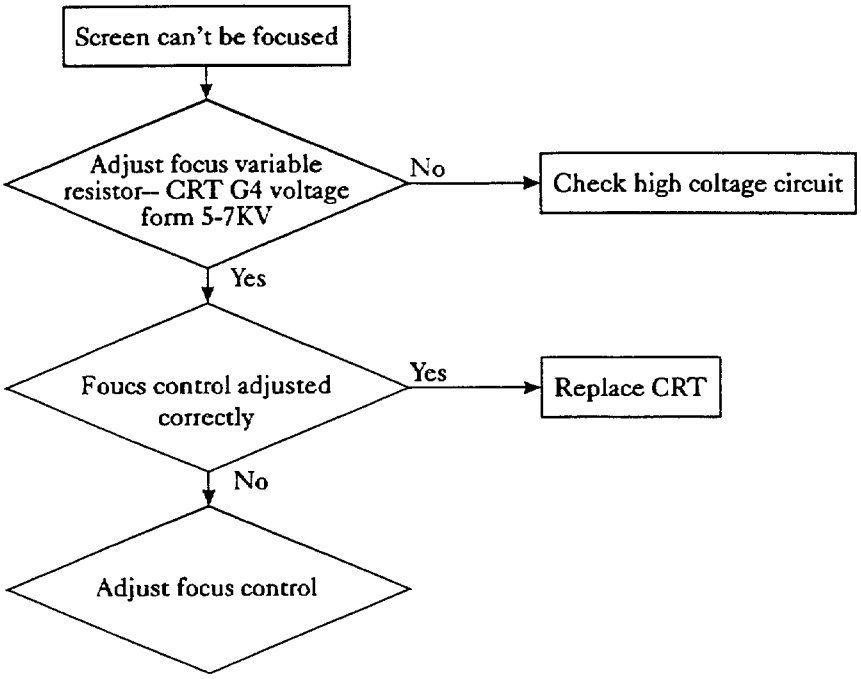
ADJ SW: **trapezoid** and **+/-** buttons

9. TROUBLESHOOTING

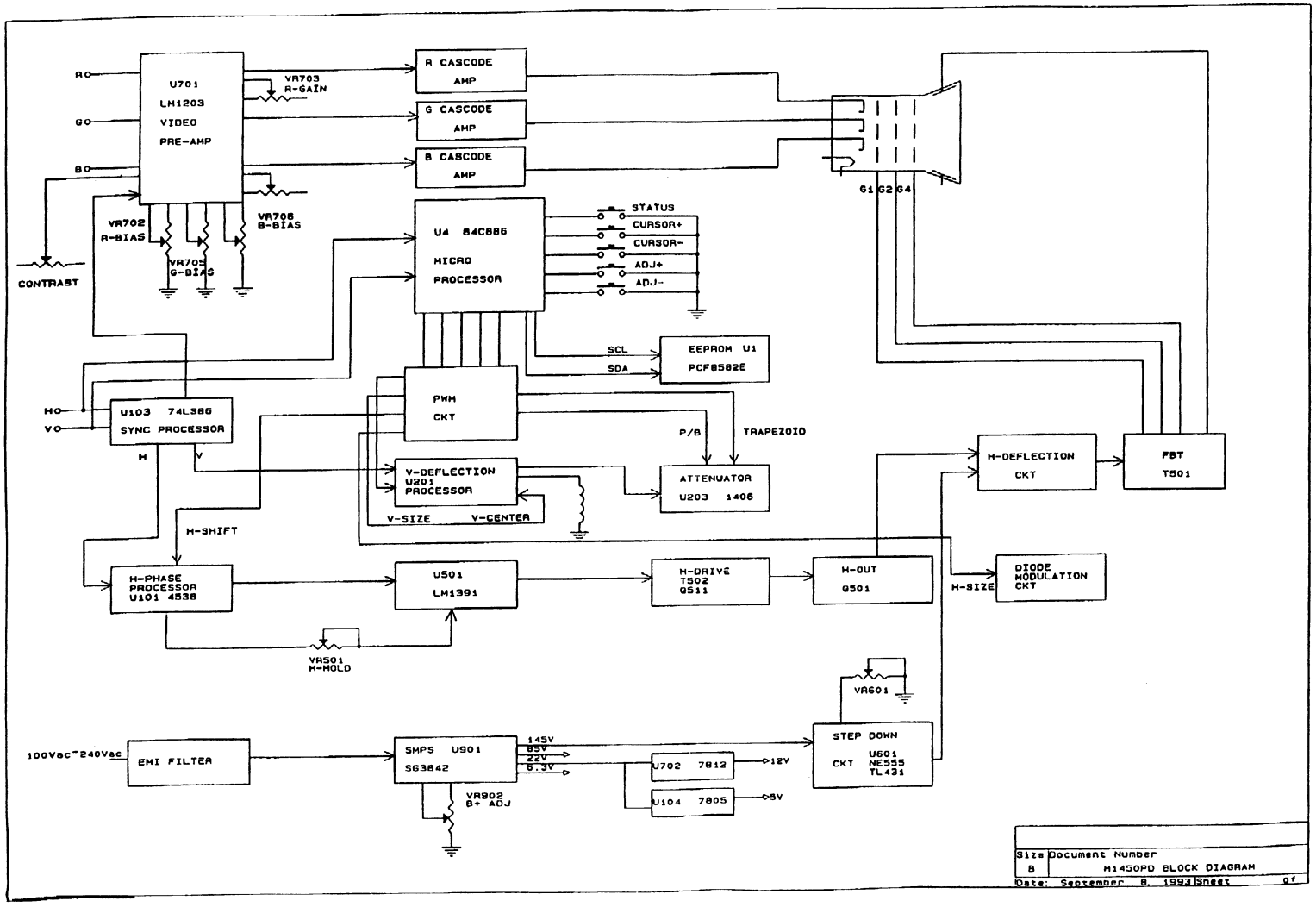



Raster shows only one single line or the lower part
Check the 22V voltage
No
Check pin14 of U201 and R222
Yes
Check Q202
No
Check R206,C202
Yes
Check D202 base saw-tooth waveform
No
Check pin7 of U201 → 6.58V
Yes
Check ZD201


No picture
Turn the CONTRAST thumbwheel to the extreme clockwise direction
Check the input signal
No
Non-display problems
Yes
Check the output signal of U701 pin16, pin20, pin25
No
Check U701
Yes
Check Q701,Q721,Q741 G.B. video amplifier
No
Check Q702,Q722,Q742


Screen can't be focused
Adjust focus variable resistor– CRT G4 voltage form 5-7KV
No
Check high coltage circuit
Yes
Foucs control adjusted correctly
Yes
Replace CRT
No
Adjust focus control

10. BLOCK DIAGRAM



11. PARTS LIST

CRT BOARD

Name	Description	Part Number
PWA	PWA-M1450PD CRT BD	640012100105
CRT SOCKET	M1564P	633100050005

RES

Location	Description	Part Number
R719, 759, 738	100, 5%, 1/2W, CF, AX	631100220101
R766	470, 5%, 1/2W, CF, AX	631100220471
R767	56K, 5%, 1/2W, CF, AX	631100220563

CAP

Location	Description	Part Number
C769	.01U, +80-20%, 1KV, HI-K, Z5U	631204157103
C770	1000P, 20%, 1KV, HI-K, Z5U	631204155102

DIODE

Location	Description	Part Number
D706	UF4003, VRRM200V	632001014003

CON

Location	Description	Part Number
J705	HDR, MA, 6P*1, 2MM,ST	633100110035

PIN HOLDER

Location	Description	Part Number
J703	D2.36MM, L14.2MM, H10.25MM	633100990001

MAIN BOARD

Name	Description	Part Number
PCB	PWA-M1450PD MAIN BD	630012100021

RES

Location	Description	Part Number
R559	300, 5%, 1/4W, CF, AX	631100210301
R762	15, 5%, 2W, MOF, F, MINI	631101140150
R206	1.5, 5%, 2W, MOF, F, MINI, M1450PD 2.0, 5%, 2W, MOF, F, MINI, L1450PD	631101140159 631101140209
R111	180, 5%, 2W, MOF, F, MINI	631101140181
R222	2.2, 5%, 2W, MOF, F, MINI	631101140229
R904, 905	47K, 5%, 2W, MOF, F, MINI	631101140473
R516	100, 5%, 3W, MOF, F, MINI	631101150101
R903	3.3K, 5%, 3W, MOF, F, MINI	631101150332
R709, 710, 729, 730, 749, 750	560, 5%, 3W, MOF, F, MINI	631101150561
R906	.15, 5%, 3W, WW, AX	631103020158
R14	10.7K, 1%, 1/4W, MF, AX	631100011072
R551	15K, 1%, 1/4W, MF, AX	631100011502
R210	200K, 1%, 1/4W, MF, AX, M1450PD 142K, 1%, 1/4W, MF, AX, L1450PD	631100012003 631100011433
R12	1.33K, 1%, 1/4W, MF, AX	631100011331
R219	22.1K, 1%, 1/4W, MF, AX	631100012212
R220	25.5K, 1%, 1/4W, MF, AX	631100012552
R11	5.6K, 1%, 1/4W, MF, AX	631100015601
R15, 110	7.5K, 1%, 1/4W, MF, AX	631100017501
R925	10, 5%, 1/4W, CF AX	631100210100
R030, 032, 570	1.0K, 5%, 1/4W, CF AX	631100210102
R020, 223, 545, 546, 577, 942	10K, 5%, 1/4W, CF AX	631100210103
R501	1.0, 5%, 1/4W, CF AX	631100210109
R517	1.8, 5%, 1/4W, CF AX	631100210189
R533	1.8K, 5%, 1/4W, CF AX	631100210182
R909, 917	22, 5%, 1/4W, CF AX	631102100220
R620	2.0K, 5%, 1/4W, CF AX	631100210202
R114, 511, 606	3.3K, 5%, 1/4W, CF AX	631100210332
R503	47, 5%, 1/4W, CF AX	631100210470
R572	4.7K, 5%, 1/4W, CF AX	631100210472
R72	5.1K, 5%, 1/4W, CF AX	631100210512
R216	560, 5%, 1/4W, CF AX	631100210561
R949	68K, 5%, 1/4W, CF AX	631100210683
R212	75K, 5%, 1/4W, CF AX	631100210753
R915	8.2K, 5%, 1/4W, CF AX	631100210822
R947, 948	10, 5%, 1/2W, CF, AX	631100220100
R529	1K, 5%, 1/2W, CF, AX	631100220102

Location	Description	Part Number
R901, 907	1M, 5%, 1/2W, CF, AX	631100220105
R614	120K, 5%, 1/2W, CF, AX	631100220124
R556	2K, 5%, 1/2W, CF, AX	631100220202
R201	2.2, 5%, 1/2W, CF, AX	631100220229
R202	330, 5%, 1/2W, CF, AX	631100220331
R554	560, 5%, 1/2W, CF, AX	631100220561
R521	680, 5%, 1/2W, CF, AX	631100220681
R101, 104	10, 5%, 1/6W, CF, AX	631100230100
R209, 536, 569, 706, 726, 746, 756	100, 5%, 1/6W, CF, AX	631100230101
R40, 051, 060, 065, 070, 075, 080, 085, R106, 112, 207, 508, 518, 534, 547, R576, 578~581, 601, 602, 757, 760, R779 908, 910, 912	1K, 5%, 1/6W, CF, AX	631100230102
R007, 121, 228, 230, 231, 234, R513, 524, 527, 530, 537, 539, 540, R544, 553, 603, 605, 702, 712, 722, R742, 911, 916, 931, 944	10K, 5%, 1/6W, CF, AX	631100230103
R502	100K, 5%, 1/6W, CF, AX	631100230104
R211, 504	1M, 5%, 1/6W, CF, AX	631100230105
R225	120, 5%, 1/6W, CF, AX	631100230121
R205	1.2K, 5%, 1/6W, CF, AX	631100230122
R215	12K, 5%, 1/6W, CF, AX	631100230123
R510, 552, 565	13K, 5%, 1/6W, CF, AX	631100230133
R240, 933	150, 5%, 1/6W, CF, AX	631100230151
R519	15, 5%, 1/6W, CF, AX	631100230150
R016~019, 548, 604	1.5K, 5%, 1/6W, CF, AX	631100230152
R080, 233, 621	15K, 5%, 1/6W, CF, AX	631100230153
R707, 727, 747	18, 5%, 1/6W, CF, AX	631100230180
R21, 22	6.2M, 5%, 1/6W, CF, AX	631100230625
R64	1.8K, 5%, 1/6W, CF, AX	631100230182
R061, 066, 067, 071, 076, 081, 086, 87 R541, 609, 616	.2K, 5%, 1/6W, CF, AX	631100230202
R77, 214, 531	20K, 5%, 1/6W, CF, AX	631100230203
R704, 744, 765	22, 5%, 1/6W, CF, AX	631100230220
R703, 714, 717, 723, 731, 734, 735, R748, 770	220, 5%, 1/6W, CF, AX	631100230221
R716, 763, 946	2.2K, 5%, 1/6W, CF, AX	631100230222
R005, 034, 035, 542	22K, 5%, 1/6W, CF, AX	631100230223
R203	2.4K, 5%, 1/6W, CF, AX, M1450PD 2.2K, 5%, 1/6W, CF, AX, L1450PD	631100230242 631100230222
R764	2.4K, 5%, 1/6W, CF, AX	631100230242
R538, 563, 732	2.7K, 5%, 1/6W, CF, AX	631100230272
R119	3K, 5%, 1/6W, CF, AX	631100230302
R615, 725, 743, 768	33, 5%, 1/6W, CF, AX	631100230330
R943	33K, 5%, 1/6W, CF, AX	631100230333
R557, 713	3.9K, 5%, 1/6W, CF, AX	631100230392
R705, 728, 745	390, 5%, 1/6W, CF, AX	631100230391
R522, 535	39K, 5%, 1/6W, CF, AX	631100230393

Location	Description	Part Number
R543, 914, 930, 932	47, 5%, 1/6W, CF, AX	631100230470
R950	470, 5%, 1/6W, CF, AX	631100230471
R13, 062, 105, 221, 523, 532, 549, 550	4.7K, 5%, 1/6W, CF, AX	631100230473
R25	47K, 5%, 1/6W, CF, AX, M1450PD 10K, 5%, 1/6W, CF, AX, L1450PD	631100230473 631100230103
R84, 512, 618	47K, 5%, 1/6W, CF, AX	631100230473
R724	51, 5%, 1/6W, CF, AX	631100230510
R945	910, 5%, 1/6W, CF, AX	631100230911
R063, 232	5.1K, 5%, 1/6W, CF, AX	631100230512
R107, 108, 560, 561	560, 5%, 1/6W, CF, AX	631100230561
R213, 507	56K, 5%, 1/6W, CF, AX	631100230563
R509, 515, 608	6.8K, 5%, 1/6W, CF, AX	631100230682
R921	68K, 5%, 1/6W, CF, AX	631100230683
R701, 721, 741	75, 5%, 1/6W, CF, AX	631100230750
R74	750, 5%, 1/6W, CF, AX	631100230751
R015	7.5K, 5%, 1/6W, CF, AX	631100230752
R715, 733, 736	82, 5%, 1/6W, CF, AX	631100230820
R505	82K, 5%, 1/6W, CF, AX	631100230823
R502	100, 5%, 1W, MOF, F, MINI	631101130101
R920	1.0K, 5%, 1W, MOF, F, MINI	631101130102
R224	150, 5%, 1W, MOF, F, MINI	631101130151
R924	47K, 5%, 1W, MOF, F, MINI	631101130473
R940	470K, 5%, 1W, MOF, F, MINI	631101130474
R208	47, 5%, 1W, MOF, F, MINI	631101130470
R902	47K, 5%, 5W, CMNT, V	631121010473

VR

Location	Description	Part Number
VR501	3000, 20%, .1W, B, V, 6MM, CARB	631120073021
VR601	5000, 20%, .1W, B, V, 6MM, CARB	631120075021
VR703, 704	100, 30%, .1W, B, H, 6MM, CARB	631120141011
VR701	10K, 20%, .1W, B, H, 6MM, CARB	631120141031
VR702, 705, 706	3000, 20%, .1W, B, H, 6MM, CARB	631120143021
VR902	500, 20%, .1W, B, H, 6MM, CARB	631120145011

NTCR

Location	Description	Part Number
TH902	50HM, 15%, DISK, 08SP005L	631120510509

PTCR

Location	Description	Part Number
TH901	200HM, 270V	631120550201

CAP

Location	Description	Part Number
C008	100P, 5%, 50V, CD, NPO	631200013101
C503, 504	390P, +80-20%, 1KV, HI-K, Y5V	631204247391
C209	330P, 5%, 50V, CD, NPO	631200013331
C110, 949	680P, 20%, 50V, HI-K, Y5V	631204375681
C610	4700P, +80-20%, 50V, HI-K, Z5V	631204017472
C506	.68U, 5%, 250V, MPP	631201803684
C501	4700P, 5%, 2KV, MPP	631201853472
C505	.33U, 5%, 250V, PP, F	631202043334
C502	.015U, 5%, 400V, PP, F	631202053153
C541	.1U, 5%, 250V, MEF, F	631202163104
C202	2200U, 20%, 16V, ALU, 85'C	631202535228
C107	33.0U, 20%, 16V, ALU, 85'C	631202535336
C526, 920	470U, 20%, 25V, ALU, 85'C	631202545477
C919	1000U, 20%, 35V, ALU, 85'C	631202555108
C509	10U, 20%, 50V, ALU, 85'C	631202560106
C746	10.0U, 20%, 100V, ALU, 85'C	631202595106
C510, 917, 923	47.0U, 20%, 160V, ALU, 85'C	631202605476
C915	47.0U, 20%, 200V, ALU, 85'C	631202615476
C511	10.0U, 20%, 250V, ALU, 85'C	631202625106
C927	150U, 20%, 400V, ALU, 85'C	631202785157
C906	100P, 20%, 1KV, HI-K, Z5U	631204155101
C507	1000P, 20%, 1KV, HI-K, Z5U	631204155102
C924, 929, 930	220P, 20%, 1KV, HI-K, Z5U	631204155221
C905	4700P, 20%, 1KV, HI-K, Z5U	631204155472
C904	.22U, 20%, 250VAC, X2-CAP	631209010224
C941	4700P, 20%, 250VAC, SFTY, Y-CAP, UL	631209210472
C112, 601	1000P, 5%, 50V, PE, F	631202243102
C604, 911	.01U, 5%, 50V, PE, F	631202243103
C206, 207, 211, 530	.1U, 50V, 5%, MEF, RA, F	631202203104
C115	2200P, 5%, 50V, PE, F	631202243222
C001	2700P, 5%, 50V, PE, F	631202243272
C532, 543, 907	3300P, 5%, 50V, PE, F	631202243332
C536	.033U, 5%, 50V, PE, F	631202243333
C210	.33U, 50V, 5%, MEF, RA, F	631202203334
C531	6800P, 5%, 50V, PE, F	631202243682
C528	5600P, 5%, 50V, PE, F	631202243562
C928	8200P, 5%, 50V, PE, F	631202243822
C201	.22U, 50V, 10%, MEF, RA, F	631202204224

Location	Description	Part Number
C20, 508, 512, 768	100U, 20%, 16V, ALU, 85'C	631202535107
C208	22.0U, 20%, 16V, ALU, 85'C	631202535226
C771	330U, 20%, 16V, ALU, 85'C	631202535337
C111, 203, 215, 216, 220, 223, 521, C524, 912, 918, 951	47.0U, 20%, 16V, ALU, 85'C	631202535476
C763, 932	470U, 20%, 16V, ALU, 85'C	631202535477
C514	47U, 16V, 205, ALU, 85'C	631202530476
C926	100U, 20%, 25V, ALU, 85'C	631202545107
C212, 540	220U, 20%, 25V, ALU, 85'C	631202545227
C213	330U, 20%, 25V, ALU, 85'C	631202545337
C515	.047U, +80-20%, 50V, SEMI, Y5V	631201547473
C606	.047U, 5%, 250V, MEF, F	631202163473
C009, 527, 534, 544, 607, 744, 931	1.0U, 20%, 50V, ALU, 85'C	631202565105
C007, C010~016, 103, 218, 533, 602, C701, 715, 721, 741, 760, 908	10.0U, 20%, 50V, ALU, 85'C	631202565106
C205, 522	.47U, 20%, 50V, ALU, 85'C	631202565474
C104, 516	4.7U, 20%, 50V, ALU, 85'C	631202565475
C542	4.7U, 20%, 100V, ALU, 85'C	631202595475
C916	47.0U, 20%, 100V, ALU, 85'C	631202595476
C219, 703, 723, 743, 910, 950	.1U, +80-20%, 50V, HI-K, Z5V	631204015104
C004, 113, 513, 520, 525, 537, 605, C704, 714, 724, 913, 914	.1U, +80-20%, 50V, HI-K, Z5V	631204017103
C713	.1U, +80-20%, 500V, HI-K, Z5V	631204057103
C6, 105, 106, 764	1000P, 10%, 50V, HI-K, Y5P	631204374102
C705, 725, 745	270P, 20%, 50V, HI-K, Y5P	631204375221
C750~752	270P, 20%, 50V, HI-K, Y5P	631204375271

COIL

Location	Description	Part Number
L601	CHOKE, 3MH, D.45, 227.5T	631300020021
L903~905, 908	CHOKE, 60UH, 10%, 8*10	631300020023
T904	CHOKE, 3MH, UU-18	631300020026
L502	CHOKE, 100UH, 16*18	631300020027
L501	LINEARITY, 11.5UH, M1450PD	631300030009
L701, 721, 741	PEAKING 3.3UH, 10%	631300010001

FBT

Location	Description	Part Number
T501	M1450PD	631360010023

XSFORMER

Location	Description	Part Number
T502	HOR, DRIVE, EE-19, M1564P	631360030001
T903	POWER SAVING, UU10.5	631360070013
T902	PWR, ER-35, TUV, M1450PD	631360070012

XTAL

Location	Description	Part Number
X001	10MHZ, 50PPM, HC-49/U	631411000401

DIODE

Location	Description	Part Number
D901~904	20D10, VRRM1000V	632001010020
D201	1N4002, ID1A, VRRM100V, D041	632001014001
D509	UF4002, VRRM100V	632001014002
D504	UF4003, VRRM200V	632001014003
D001, 002, 004, 104, 202, 505, 506, D508, 510, 512, 701~704, 910, 911	1N4148	632001014148
ZD210, 903	HZ3B2, ZENER, 3V, .1V, 0.5W	632002010032
ZD504	HZ5C2, ZENER, 5V, 5%	632002010005
ZD205	HZ7B2, ZENER, 7V, .5W	632002010073
ZD503, 601	HZ11B2, ZENER, 10.6V, .2V, 0.5W	632002010112
ZD501, 502	HZ12A2, ZENER, 12.2V, .2V, 0.5W	632002010122
ZD602	HZ18-2, ZENER, 17.9V, .4V, 0.5W	632002010182
ZD904	HZ20-2, ZENER, 20V, .4V, 0.5W	632002010202
ZD901	ZENER, 5.1V, 1W	632002010085
D609, 906, 914, 919, 920	BYV36A, VRRM200V, AX, SOD-57	632010003601
D905, 915, 918	BYV36C, VRRM600V, AX, SOD-57	632010003602
D501~503	MR856, VRRM600V, AX	632010085601

TRANS

Location	Description	Part Number
Q708, 710, 720	PH2369, NPN, TO-92	632030236901
Q512	BF423, PNP, 830MW	632031010423
Q012~017, 505, 516, 520, 530, 540, Q 604, 705, 903	2SA733Q, PNP	632031000733
Q010, 011, 101, 102, 105, 201, 202, Q205, 506, 507, 509, 510, 513, 515, Q517~519, 521, 524~526, 529, Q601~603, 701, 703, 704, 721, 723, Q731, 741, 902, 905, 911, 912	2SC945Q, NPN	632031010945

Location	Description	Part Number
Q612	IRF9620, P-MOSFET, TO-220	632010962001
Q522	BF422, TO-92	632030042201
Q501	BU2508DF NPN, SOT199	632030250801
Q511	2SD669AC, NPN	632031010669
Q504	2SD1138C, NPN	632031011138
Q702, 722, 742	2SC3953D, NPN, TO126	632031013953
Q502	2SK1221, MOSFET, N-CHNL, TO220AB	632032011221
Q901	2SK1507-01, MOSFET, TO-220F	632032150701
Q907	2SK2160, N-MOSFET, TO-220ML	632032216001

OPTOCOUPLER

Location	Description	Part Number
U902	CNX82A	632033150082

IC

Location	Description	Part Number
U103	74LS86A, QUAD 2I/P XOR GATES	632100090086
U202	LM358, DUAL OP/AMP	632200010358
U602, 906	TL431CLP	632200310431
U601	NE555, TIMER, 8P	632200310555
U501	MC1391P, HOR, PROCESSOR, 8P	632200311391
U901	3842, CURRENT-MODE PWM CTLR	632200313842
U101	HEF4538B, DUAL PMM, 16P	632230453801
U702	7812, VOLT REGULATOR, TO-220, 3P	632200110080
U104	VOLT REGULATOR, TO-220	632200110082
U701	LM1203, VIDEO PROCESSOR	632200211203
U201	TDA1675A, VERTICAL PROCESSOR, 15P	632200311675
U203	UPC1406HA, ATTENUATOR, 9P	632230140601
U001	EEPROM, 256*8, 8P, PCF8582	632340090103
U004	PCE84C886, MOCROCONTORLLER, 42P	632418488601

CON

Location	Description	Part Number
J902	HDR, MA, 2P*1, ST, TIN, 7.5MM	633100110002
DY	HDR, MA, 4P*1, ST, TIN PIN2.36MM	633100110024
J001	HDR, MA, 6P*1, 2MM, ST	633100110035
J903, TP2	HDR, SHROUDED, MA, 2P*1, ST, TIN	633100110202
J502, 704	HDR, SHROUDED, MA, 3P*1, ST, TIN	633100110203
J701	HDR, SHROUDED, MA, 10P*1, ST, TIN	633100110210
J901	WFR, MA, 3P*1, ST	633100110303

OTHERS

Location	Description	Part Number
G1	WIRE; 1007, #24, BRN, 310MM, 7/7	633200012416
HEATER	WIRE; 1007, #24, RED, 225MM, 7/7	633200012421
D1138	HEATSINK; VIDEO, M1420 COMM	634312000002
TDA1675, K1507	HEATSINK; VERTICAL O/P, M1564P	634312100002
FOR Q702, 722, 742	HEATSINK; CRT BD, Q701, 731, 761, M1564P	634312100003
BU2508DF	HEATSINK; HORIZ, M1450PD	634312100031
FOR IRF9620	HEATSINK; 20H, M1450PD	634312100032

Name	Description	Part Number
LED	RECT, GRN, 2*5, .1	633400010001
FUSE	250V/3A, SLO, UL/CSA	633500010001
FUSE HOLDER	5*20MM, FC-04-01	633500020001
SHIELD	VIDEO, M1450PD	634112100001
BRKT	ARM, M1420 COMM	634212000006
ETO SCREW	M3L8, FLANGE HEAD	634212000019
BRKT	PCB MOUNTING, RIGHT, M1564P	634212100001
BRKT	PCB MOUNTING LEFT, M1564P	634212100002
REAR PANEL	M1564P	634212100004

SW BD

Name	Description	Part Number
PCB	PWA-L1450PD UP SW BD	630012100024
WIRE ASSY	1061, #26, 6P, 200MM	642200010076

SW

Location	Description	Part Number
SW002~006	TACTILE, 15V/20MA	633700150001

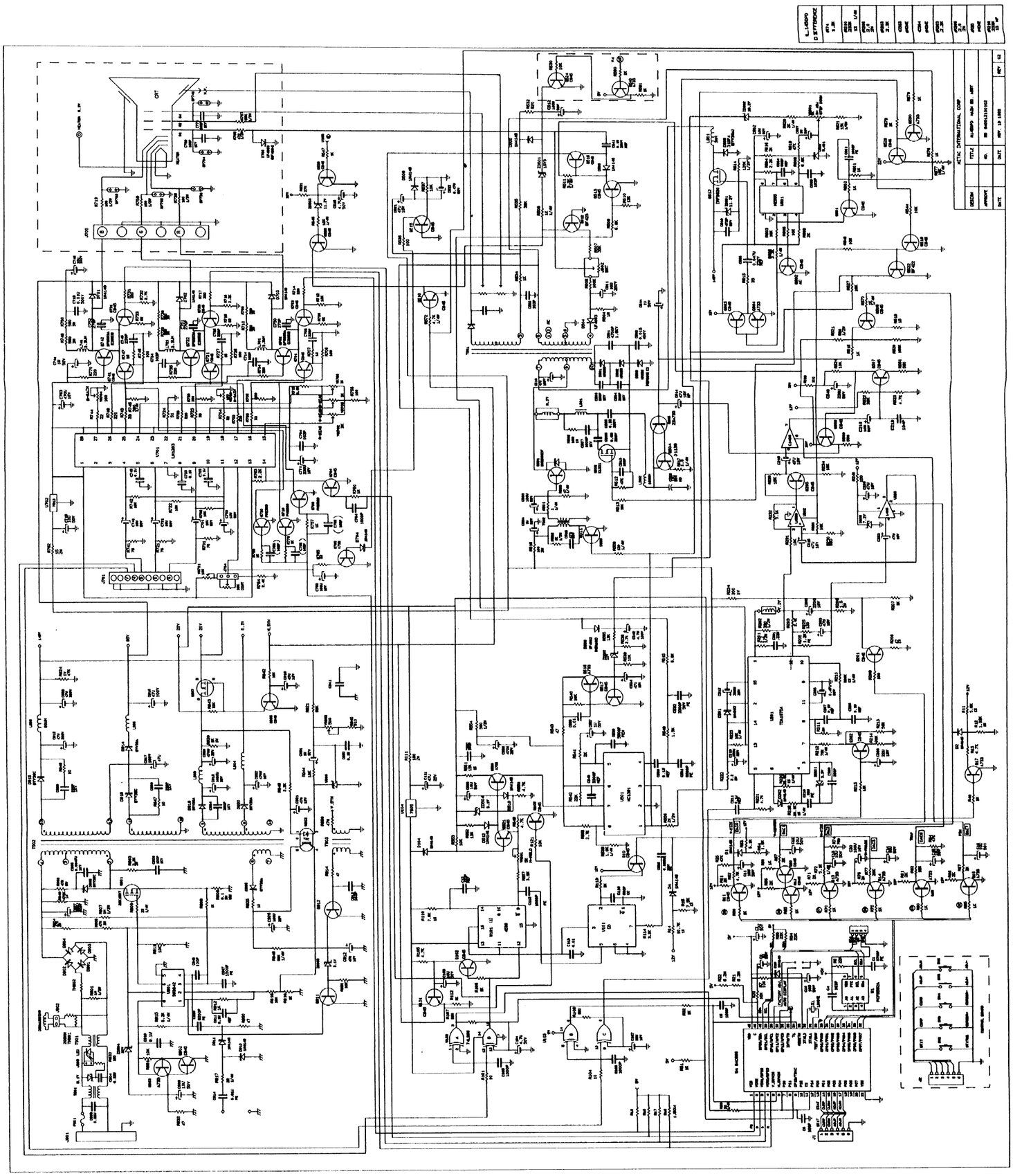
BRT. & CONT. BD

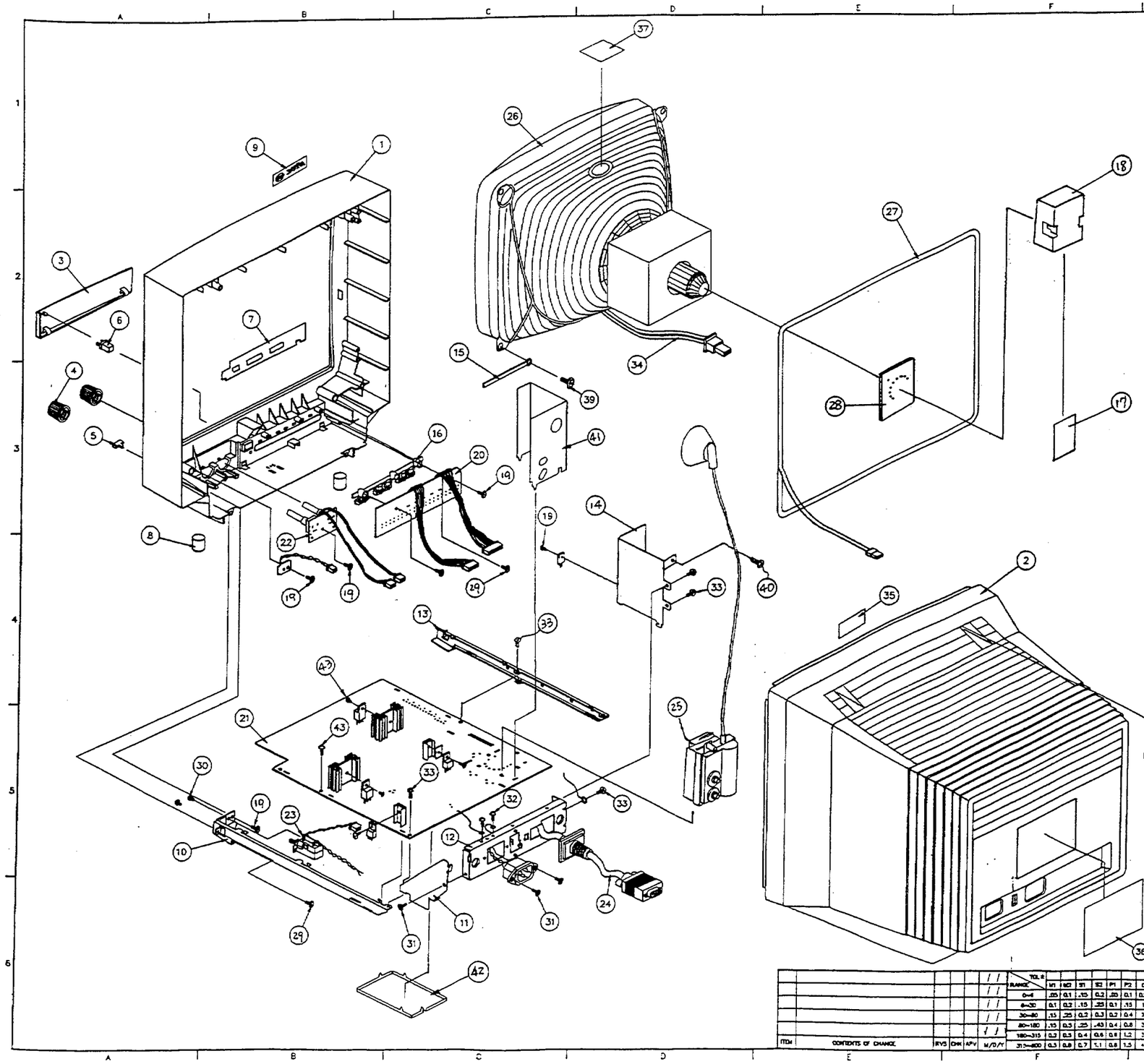
Name	Description	Part Number
PCB	PWA-M1564P BRT. & CONT. BD	630012100005
VR	10K, 20%, .05W, B, H, D10MM	631120130103
VR	20K, 20%, .05W, B, H, D10MM	631120130203

12. SERVICE DIAGRAMS

The following pages contain service diagrams.

Part Number	Description	Rev	Pages
SD640012100102	M1450PD MAIN BD, ASSY	R02	1 sheet
AD645012100171	MONITOR ASSY, M1450PD	R01	1 sheet
AD645012100172	MONITOR ASSY, L1450PD	R00	1 sheet
AM630012100021~2	TEXT SIDE, COPPER SIDE, BACK TEXT SIDE	R0C	3
AM630012100005, 0024	TEXT SIDE, COPPER SIDE, BACK TEXT SIDE	R0A	3





ITEM	P/N	DESCRIPTION 1 ST	QTY	UNIT	REMARKS
(43)	6371212300883	SCREW/SW/LW; M3 L10	4	EA	
(42)	6341121000C1	SHIELD-VIDEO M1450PD	1	EA	
(41)	6342124000033	SHIELD; FBP, L1450PD	1	EA	
(40)	6373104010001	T-SCREW; M4S, L10, RND(+), ZNC	7	EA	
(39)	6370105010001	SPC-SCREW/EW,M5,ZNC,304	4	EA	
(38)	6373204D1001	T-SCREW,P,M4,L16,TRS(+)	4	EA	
(37)	624200010003	LABEL,WARNING,M1420 COMMON	1	PC	
			1		
(36)	624200103/3	LABEL;BACKCOVER,L1450PD	1	PC	
(35)	624200010006	LABEL;X-RAY,WARNING,M1420	1	PC	
(34)	642200010001	WIRE ASSY; 14" .CRT GND	1	ST	
(33)	6342120000019	ETD SCREW,M3 L8,FLNGE HEAD	7	EA	
(32)	6373004D2081	T-SCREW/EGW,S,M4 L8,PAN(+)	2	EA	
(31)	6373003020061	T-SCREW;S,M3 L8,FLT(+),NIW	3	EA	
(30)	6370103010001	SPC-SCREW;M3L8,ZNC,FLNG/PAN(+)	2	EA	
(29)	6373104010003	T-SCREW;B,M4L12, PAN(+),O.ZNC	2	EA	
(28)	6400121D0133	PWA;PWA-L1450PD CRT BD	1	ST	
(27)	6313000500017	COIL;DEGAUSING,M1450PD	1	EA	
(26)	6435000100049	CRT;14"-LLR,M34KNZZ80X06	1	EA	
(25)	6313600100023	FBT;.M1450PD	1	EA	
(24)	64220005D020	CABLE ASSY;SIGNAL,M1450PD	1	EA	
(23)	6422000100079	WIRE ASSY; FILTER/SW M1450P	1	ST	
(22)	6400121000107	PWA;PWA-M1450PD BRT&CONT BD	1	ST	
(21)	6400121000131	PWA;PWA-L1450PD-01U MAIN BD	1	ST	
(20)	6400121000106	PWA;PWA-M1450PD UP SW BD	1	ST	
(19)	6373103010001	T-SCREW; B,M3 L8,TRS(+),O.ZNC	5	EA	
(18)	6341210000C3	SHIELD;CRT BD,M1450PD	1	EA	
(17)	6384200000001	INSULATION PAPER,M1450PD	1	PC	
(16)	6344121D0009	KEY CAP;AUX CTR'L,OSD,M1564P	1	EA	
(15)	6342120400003	STRIP CABLE,M1440	4	EA	
(14)	6343121000031	HEATSINK;HORIZONTAL,M1450PD	1	EA	
(13)	6342121000002	BRKT;PCB MOUNTING,LEFT,M1564P	1	EA	
(12)	6342121000004	PANEL-REAR;M1564P	1	EA	
(11)	6342120000006	BRACKET-ARM	1	EA	
(10)	6342121000001	BRKT;PCB MOUNTING,RIGHT,M1564P	1	EA	
(9)	624200050052	LOGO,M1564P	1	PC	
(8)	6345120000002	RUBBER PAD,M1420 COMMON	2	EA	
(7)	62420010D010	OVERLAY;AUX CTRL, M1450PD	1	EA	
(6)	6340120700001	DOOR LOCK,M1740	1	EA	
(5)	6344121000104	BUTTON;POWER,ON/OFF,M1464P	1	EA	
(4)	6344121000105	THUMB,WHEEL,B/C,M1464P	2	EA	
(3)	6344121000103	DOOR;AUX CTR'L,M1464P	1	EA	
(2)	6344121000102	BACK COVER;M1464P	1	EA	
(1)	6344121000101	BEZEL;M1464P	1	EA	

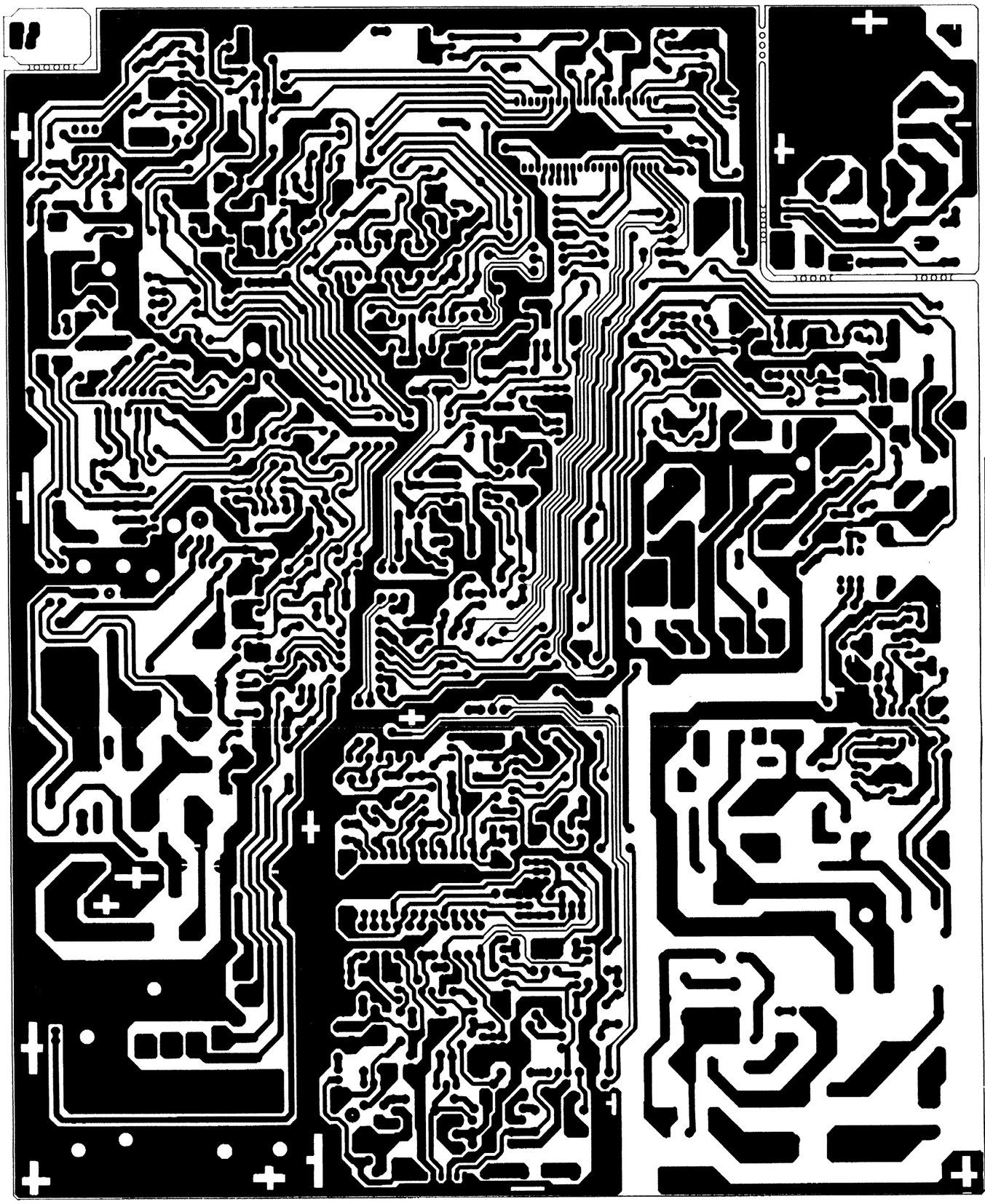
ITEM	CONTENTS OF CHANGE	REVS	CHK	APV	M/D/Y

RANGE	TOL±	M1	M2	S1	S2	F1	F2	C	R
0~6		.05	0.1	.15	0.2	.05	0.1	0.5	
6~30		0.1	0.2	.15	.25	0.1	.15	1	
30~80		.15	.25	0.2	0.3	0.2	0.4	3	
80~180		.15	0.3	.25	.45	0.4	0.8	3	
180~315		0.2	0.3	0.4	0.6	0.8	1.2	3	
315~400		0.3	0.8	0.7	1.1	0.8	1.5	4	

DATE	9/15/93'	MATERIAL		TREATMENT	REMARK
UNIT	X	SCALE	X	DRAWING NAME	MONITOR ASSY;L1450PD-01U
DRAWN	DESIGNED	CHECKED	APPROVED	MATERIAL NO.	AD 645 0121 00172 R00

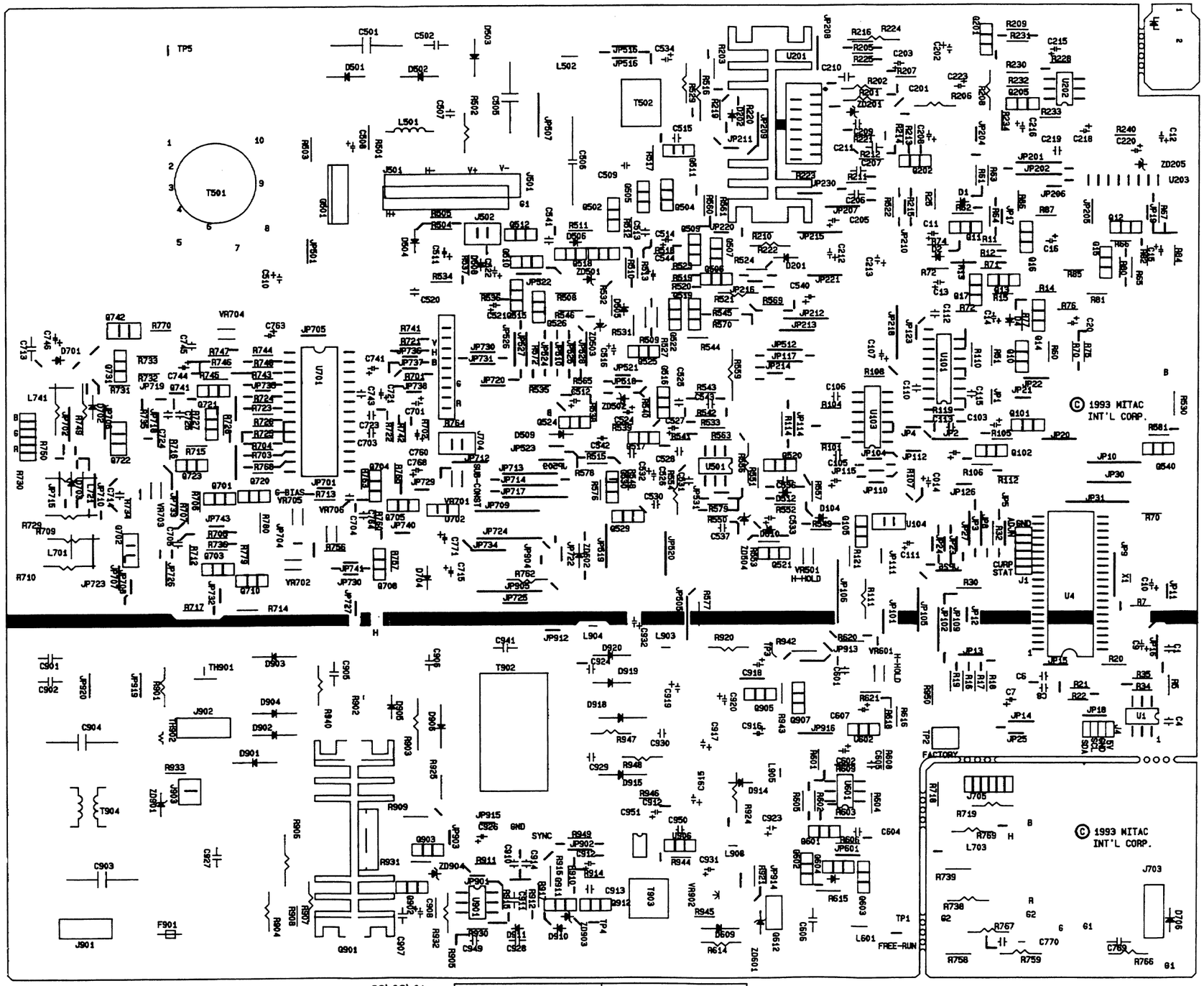
MiTAC International Corp-

SHEET NO. 1 OF 1



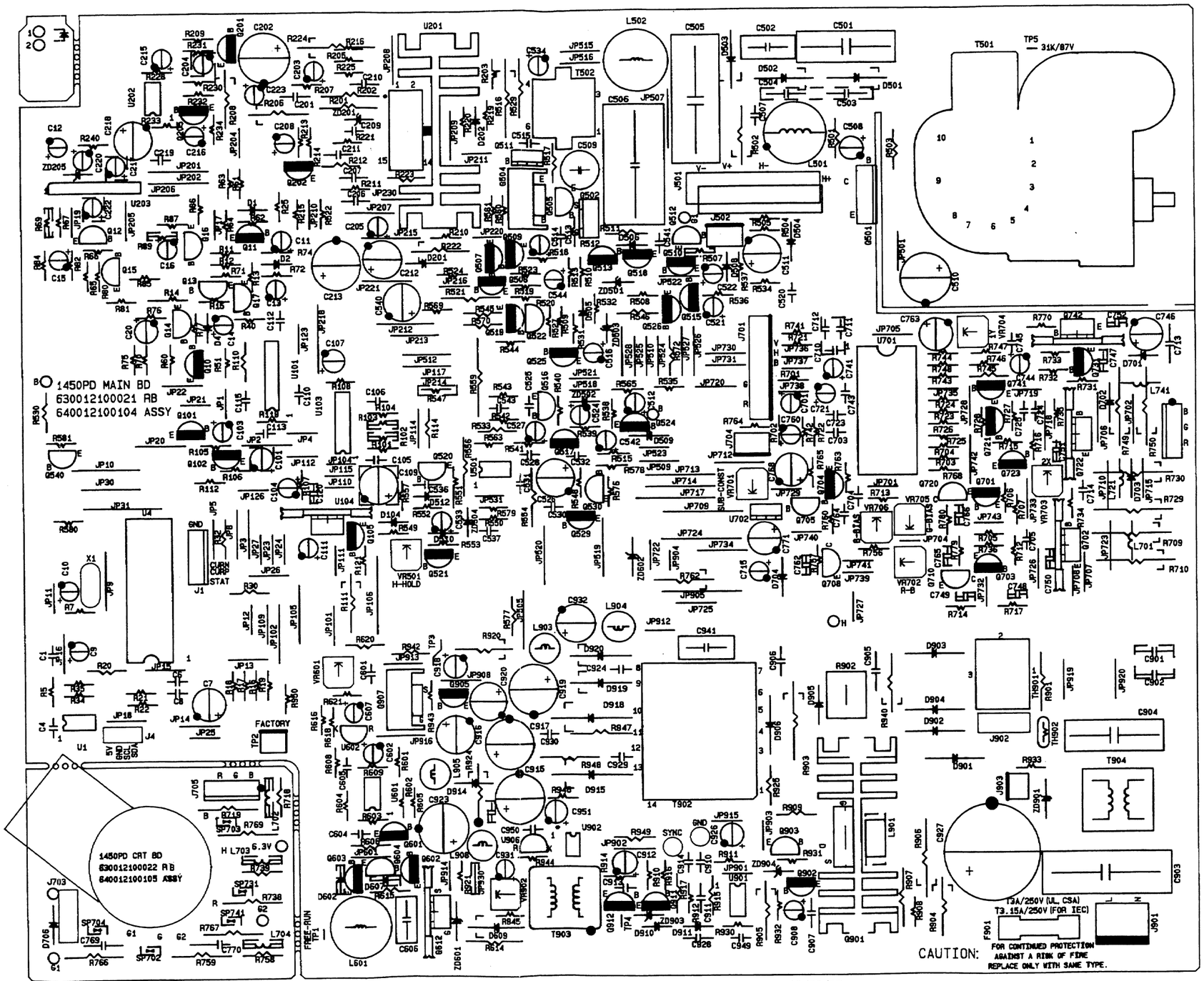
630012100021-RB	1450PD COPPER(SOLD SIDE)
MiTAC	PAGE 5 OF 1

10\50\03



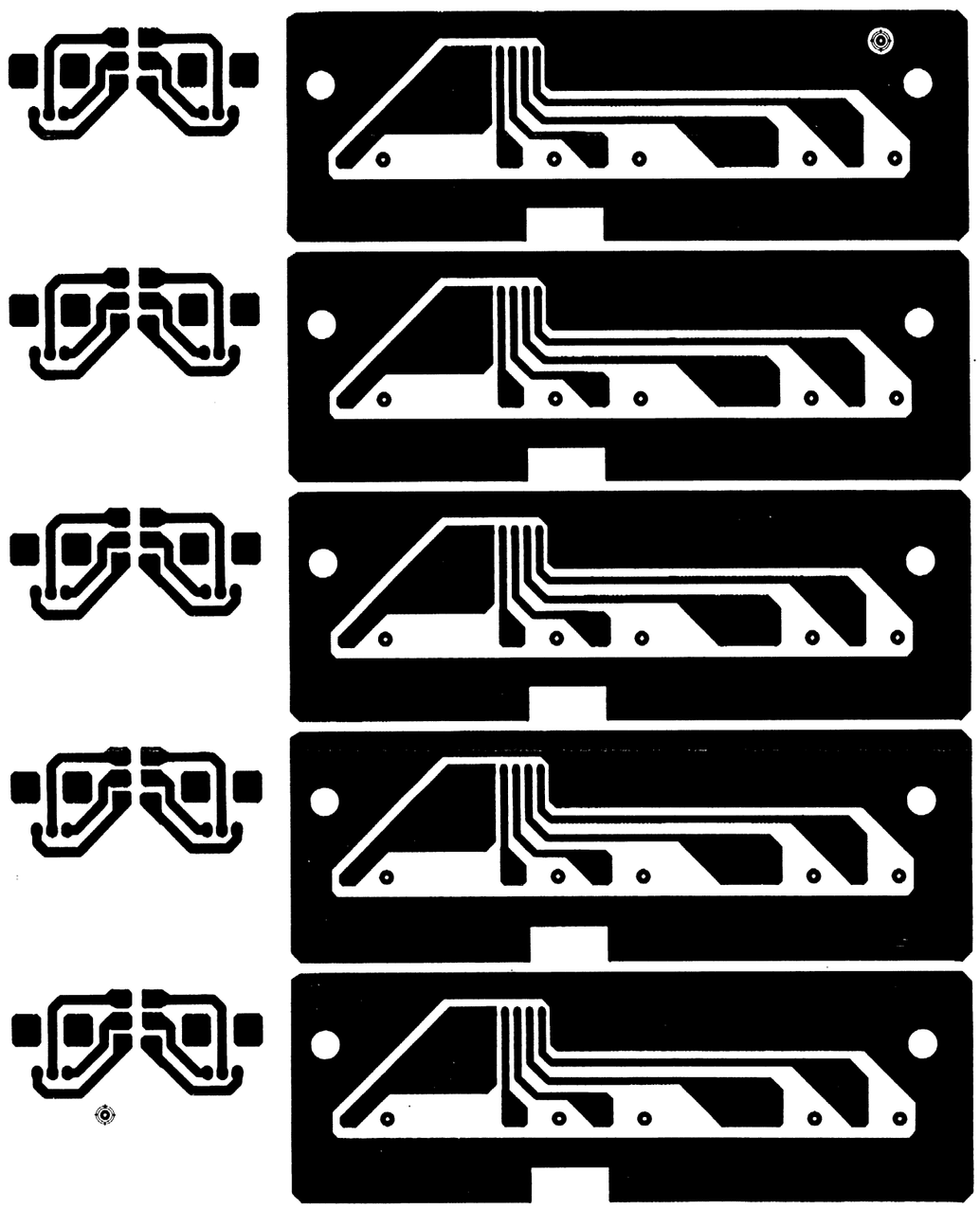
10\20\93

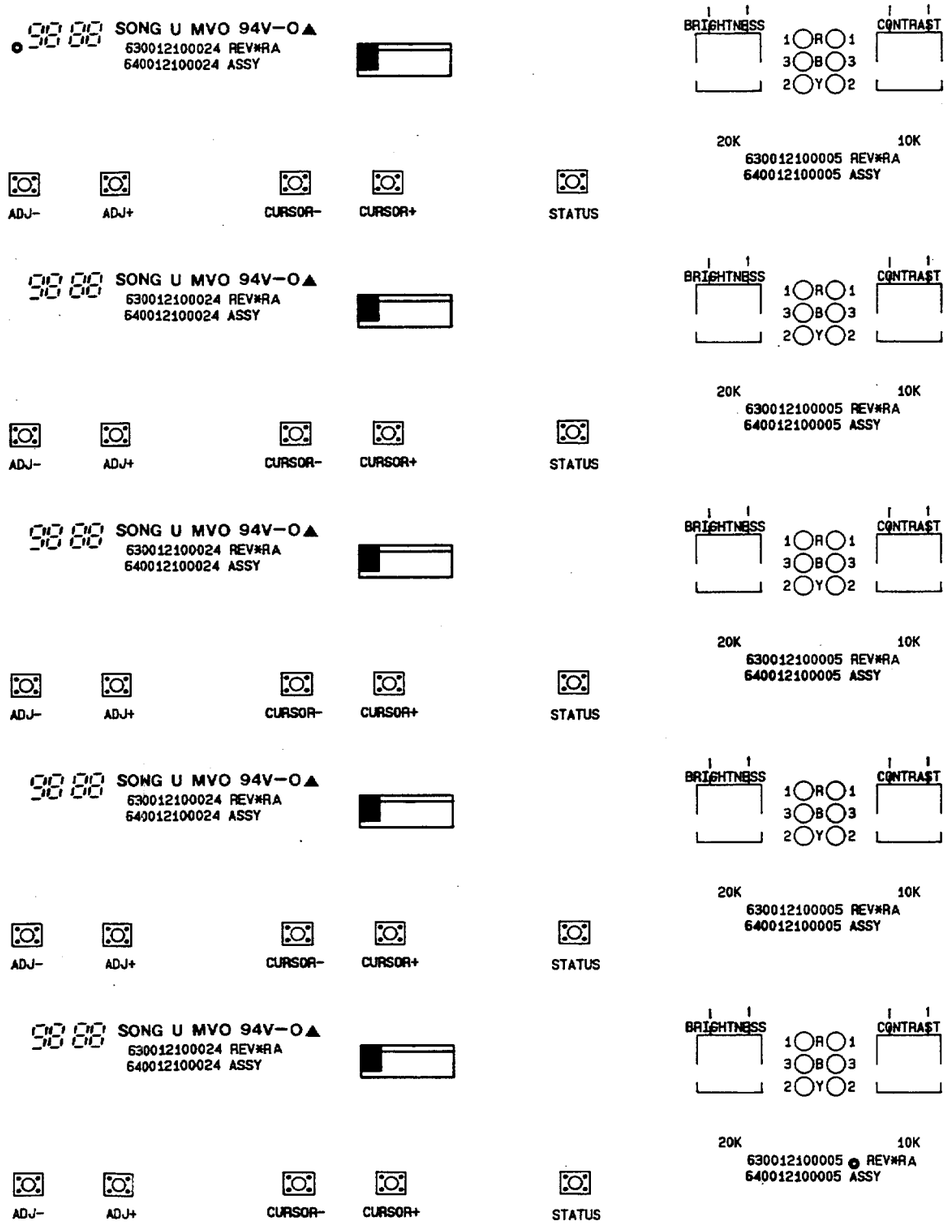
630012100021-RB	1450PD TEXT (SOLD SIDE)
MiTAC	PAGE 5 OF 3



10/20/93

1450PD TEXT (TOP SIDE)	630012100021-RB
PAGE 5 OF 4	MiTAC

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SONG U MVO 94V-0▲
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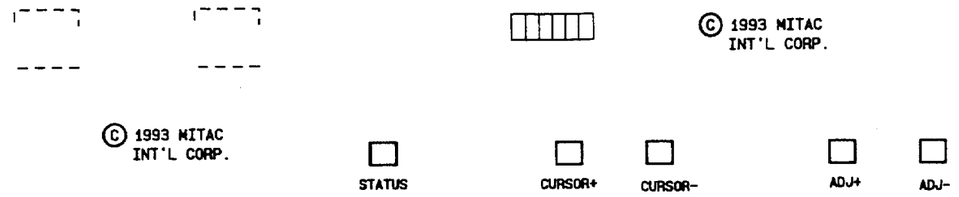
640012100024 ASSY
ADJ-
ADJ+
CURSOR-
CURSOR+
STATUS
BRIGHTNESS
CONTRAST
1 R 1
3 B 3
2 Y 2
20K
10K
630012100005 REV*RA
640012100005 ASSY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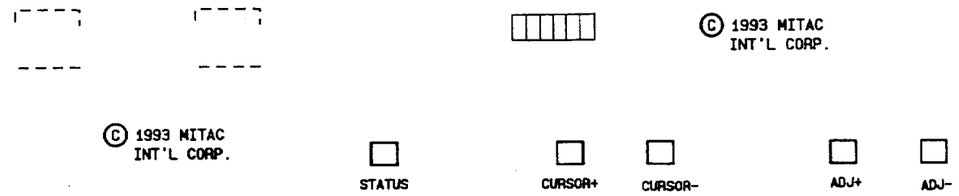
CURSOR-
ADJ+
ADJ-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STATUS
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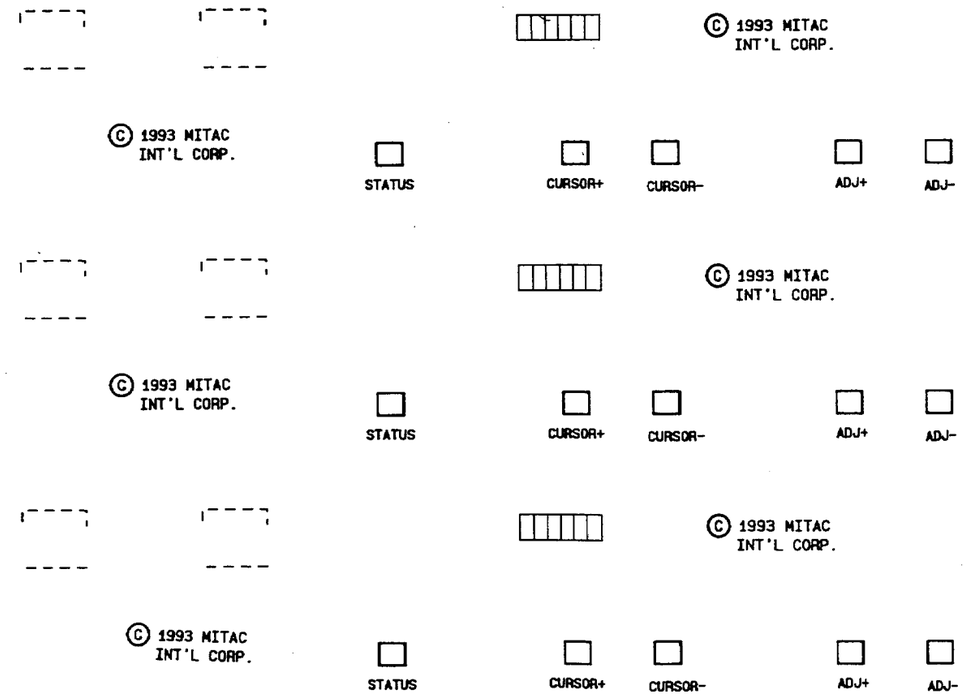
CURSOR-
ADJ+
ADJ-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STATUS
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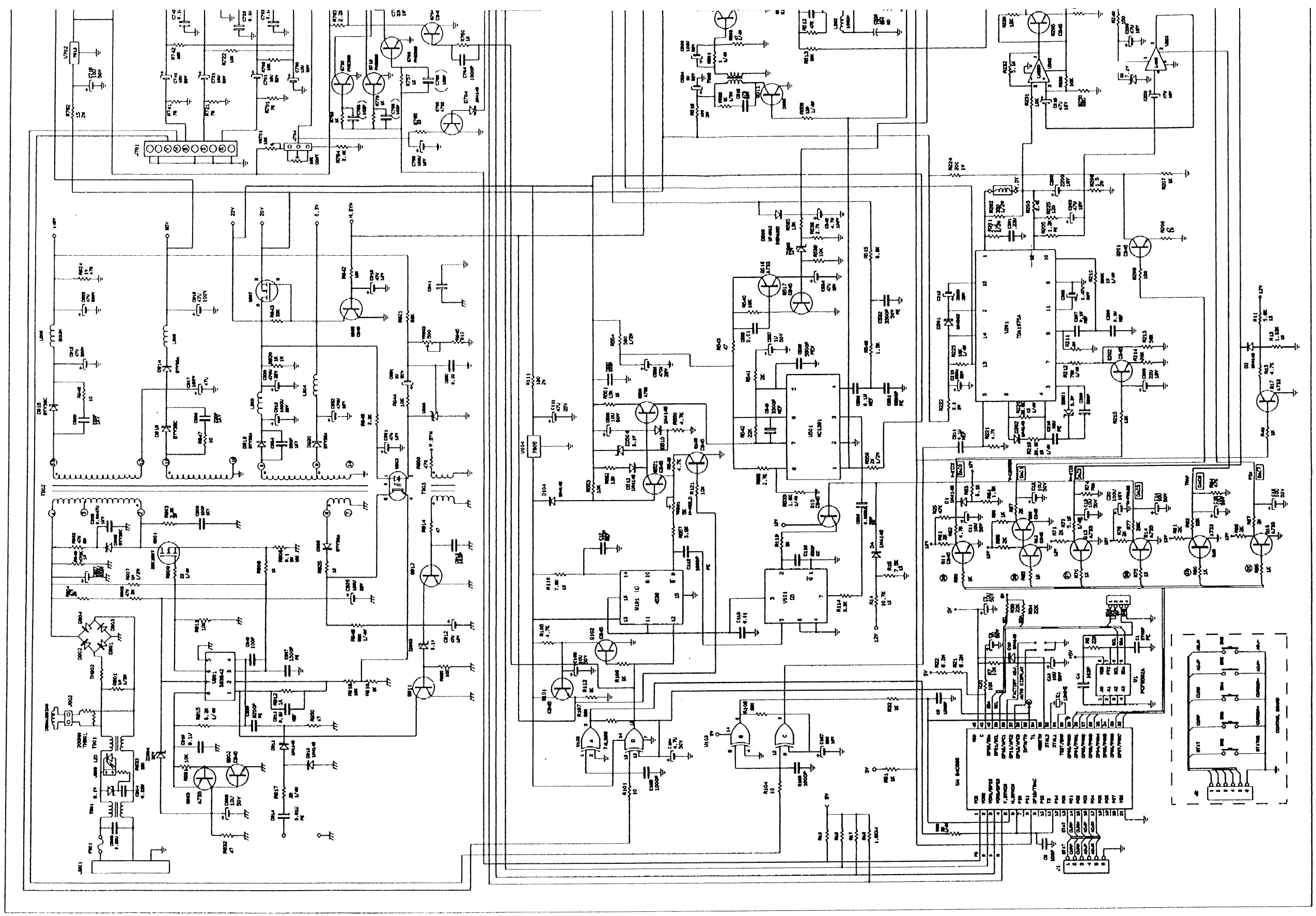
CURSOR-
ADJ+
ADJ-



L.V.ADJ'D DIFFERENCE	R74 1.3K	R536 33 1/4W	R506 2.0 2W	R503 2.3K	C503 400C	C504 400C	R503 2.3K	R506 2.0 2W	R505 400	R536 33 1/4W

	METAC INTERNATIONAL CORP.		REV 1.2
DESIGN	TITLE	KL-650PD MAIN BD. ASSY	
APPROVE	NO.	BD 8490125010X2	
DATE	DATE	REV. 10 1993	